DOE Regional Carbon Sequestration Partnerships

Phase II Kickoff Meeting
Field Validation Testing

October 13-14, 2005

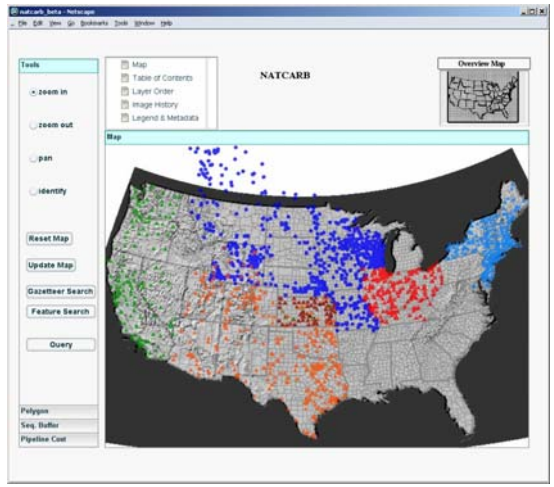
National Energy Technology Laboratory

Office of Fossil Energy

Phased Approach

Phase I (Characterization)

- 7 Partnerships (40 states)
- 24 months (2003-2005)



Phase II (Field Validation Tests)

- 4 years (2005-2009)
- 7 regions
- $100 million federal funds
- $45 million federal funds

Phase III – 2009-2013

- Pending authorization
- Significance to FutureGen

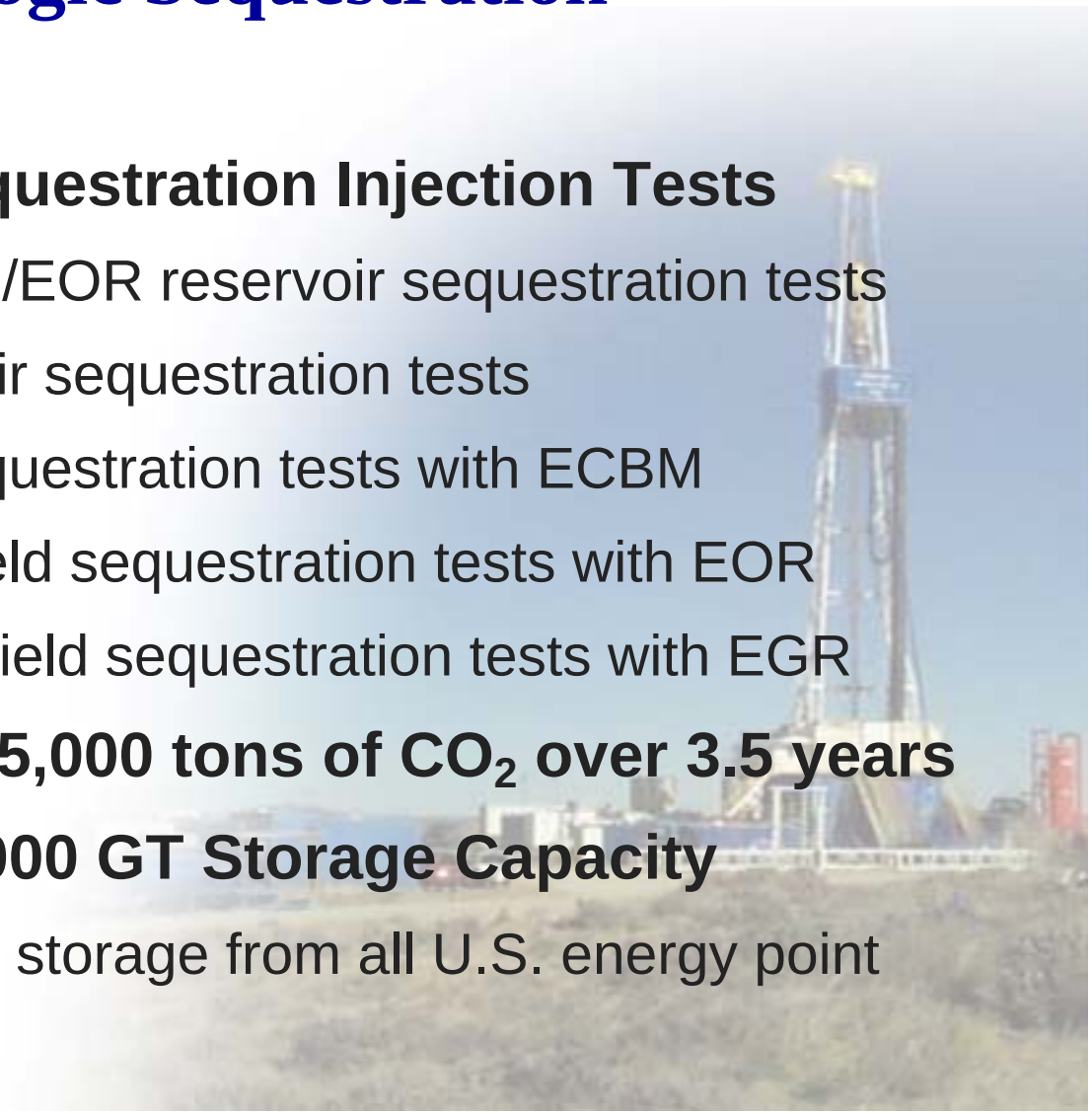
Phase I Accomplishments

- **Carbon Sequestration Atlases**
  - GIS based regional systems & support to NATCARB
- **Decision support tools**
  - Assess sink characteristics for potential sites
  - Proximity to sources and transportation infrastructure
- **MMV technologies and protocols**
- **Matching sources with capture technology**
- **Permitting guidelines**
- **Outreach and education mechanisms**
  - Town hall meetings, focus groups, videos

Phase II Goals
Field Validation Testing

1. Perform regional technology validation tests for 2012 technology assessment
2. Refine and implement MMV protocols
3. Continue regional characterization
4. Regulatory compliance activities
5. Implement public outreach and education
6. Identify commercially available sequestration technologies ready for large scale deployment

Geologic Sequestration



- **25 Geologic Sequestration Injection Tests**
  - 4 stacked saline/EOR reservoir sequestration tests
  - 6 saline reservoir sequestration tests
  - 6 coal seam sequestration tests with ECBM
  - 8 depleted oil field sequestration tests with EOR
  - 1 depleted gas field sequestration tests with EGR
- **Injecting 750-525,000 tons of CO_2 over 3.5 years**
- **Represents >1,000 GT Storage Capacity**
  - ~500 years CO_2 storage from all U.S. energy point sources

Terrestrial Sequestration

10 Terrestrial Indirect Sequestration Tests

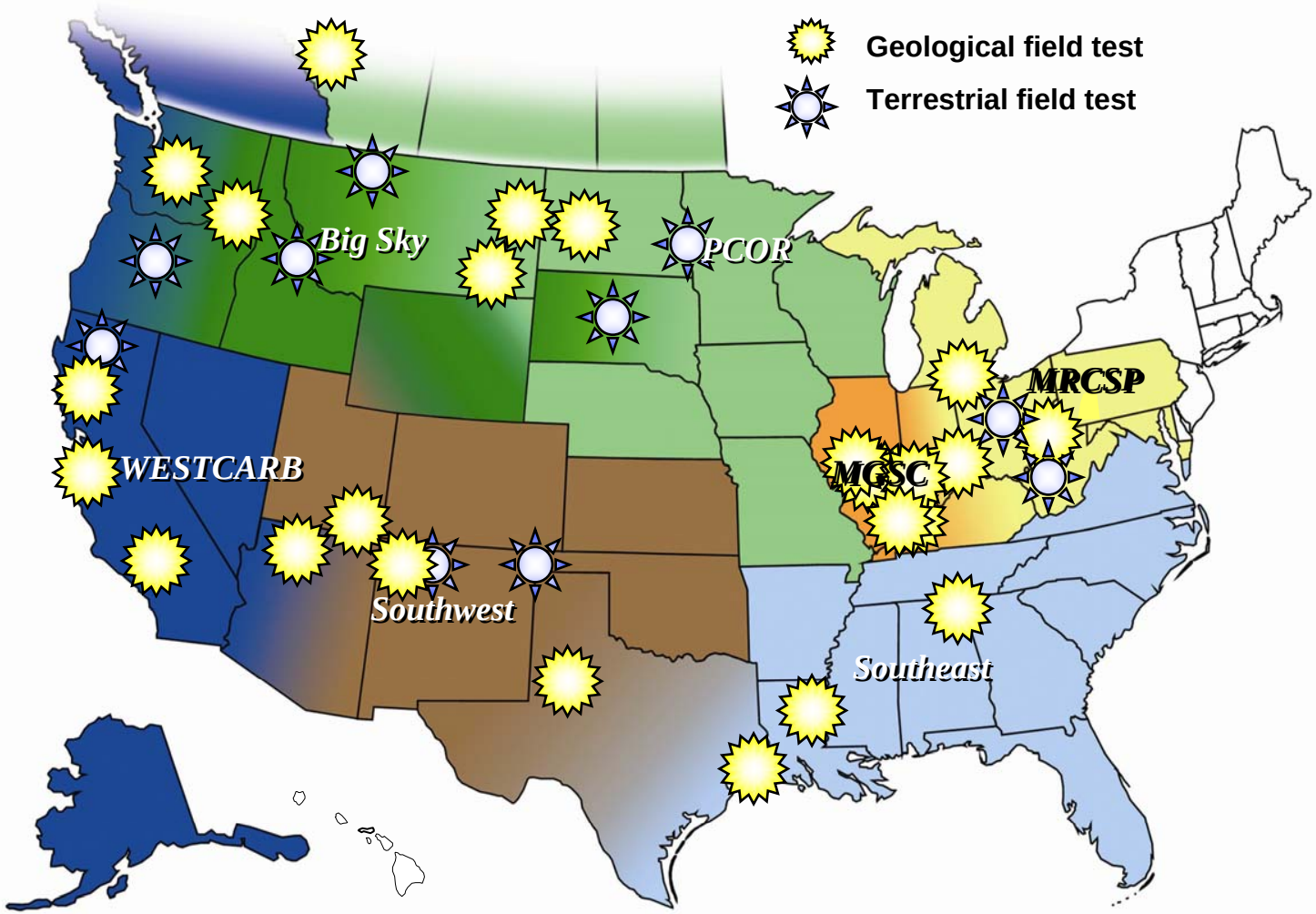
- 4 Agriculture/Rangeland management
- 4 Forestry
- 1 Mineland restoration
- 1 Wetland/Prairie Restoration

Regionally important sinks

Currently offsets ~50% GHG emissions from energy point sources

- 828 Tg in 2005 (down 20% since 1990)
- Reverse this trend

Regional Carbon Sequestration Partnerships
Field Validation Tests



Partnerships Collaborating Activities

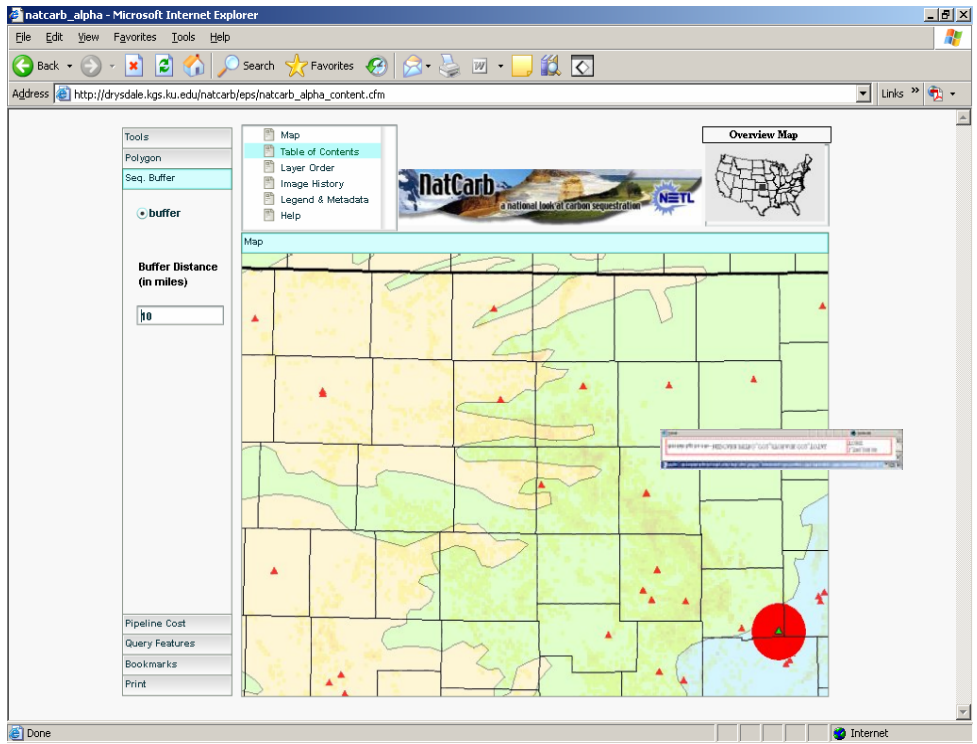
- **Working Groups**
  - Geologic (Injection and storage)
  - Capture and Transportation
  - GIS/Database Development
  - Public Outreach and Education
- **NATCARB**
- **Regulatory Task Force (IOGCC)**
- **WebPages and Presentations**
- **CSLF Project**

Working Groups

- **Geologic (Injection and storage)**
  - "Standardized" formation characteristics
  - Forum to discuss issues (i.e. unmineable coal)
  - Workshop held in Midland, TX at Frio Brine site
- **Capture and Transportation**
  - Discuss sources of data and capture technologies
  - Joint workshop and paper at national conference
- **Public outreach and education**
  - Developed common messages for sequestration
  - Series of seminars with industry, NGOs, trading companies
- **GIS / Database Development**
  - Share tools and methods and to develop regional atlases
  - Collaboration with NATCARB

NATCARB

- **National perspective of sequestration potential**
- **Decision support tools**
  - Polygons for source data
  - Capacity buffers
  - Pipeline tool
- **Gateway to partnerships**
- **Outreach tool**
- **Continue to collaborate**



Regulatory Task Force (IOGCC)

- **Existing regulatory structure and gaps**
  - Capture
  - Transportation
  - Injection
  - Post injection storage (ownership and liability)

- **Phase II**
  - Continue regulatory assessment
  - Provide support to Phase II field validation tests

NEPA Process

Separate from Permitting Process

Project vs. Programmatic

Environmental Questionnaires

Project manager → NEPA Compliance Officer

Regulations

- **National Environmental Policy Act of 1969**
- **Council on Environmental Quality Regulations for Implementing NEPA (40 CFR Parts 1500-1508)**
- **Department of Energy NEPA Regulations (10 CFR Par 1021)**

Summary

- **Partnerships multidisciplinary teams have become effective at matching sources and sinks**
- **Realistic estimates of capacity show sequestration as a real GHG mitigation opportunity**
- **Private/public partnerships such as these are necessary for wide scale deployment**
- **Continued partnerships collaboration necessary to build upon our success – existing and new working groups**